

# DC-Micromotors

## Precious Metal Commutation

0,17 mNm  
0,5 W

### Series 0615 ... S

Values at 22°C and nominal voltage	0615 N	1,5 S	003 S	4,5 S	
1 Nominal voltage	$U_N$	1,5	3	4,5	V
2 Terminal resistance	$R$	3,9	16,2	37,7	$\Omega$
3 Efficiency, max.	$\eta_{max}$	52	50	48	%
4 No-load speed	$n_0$	19 100	20 200	20 000	min <sup>-1</sup>
5 No-load current, typ. (with shaft $\varnothing$ 0,8 mm)	$I_0$	0,03	0,016	0,012	A
6 Stall torque	$M_H$	0,24	0,22	0,21	mNm
7 Friction torque	$M_R$	0,02	0,02	0,02	mNm
8 Speed constant	$k_n$	13 840	7 346	4 872	min <sup>-1</sup> /V
9 Back-EMF constant	$k_E$	0,072	0,136	0,205	mV/min <sup>-1</sup>
10 Torque constant	$k_M$	0,69	1,3	1,96	mNm/A
11 Current constant	$k_I$	1,449	0,769	0,51	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	78 224	91 538	93 713	min <sup>-1</sup> /mNm
13 Rotor inductance	$L$	12	39	95	$\mu$ H
14 Mechanical time constant	$\tau_m$	8	10	10	ms
15 Rotor inertia	$J$	0,01	0,01	0,01	gcm <sup>2</sup>
16 Angular acceleration	$\alpha_{max}$	244	221	213	$\cdot 10^3$ rad/s <sup>2</sup>
17 Thermal resistance	$R_{th1} / R_{th2}$	35 / 76			K/W
18 Thermal time constant	$\tau_{w1} / \tau_{w2}$	2,6 / 110			s
19 Operating temperature range:					
– motor		-30 ... +85 (optional version	-30 ... +125)		°C
– winding, max. permissible		+85 (optional version	+125)		°C
20 Shaft bearings		sintered bearings			
21 Shaft load max.:					
– with shaft diameter		0,8			mm
– radial at 3 000 min <sup>-1</sup> (1,5 mm from bearing)		0,5			N
– axial at 3 000 min <sup>-1</sup>		0,1			N
– axial at standstill		20			N
22 Shaft play:					
– radial	$\leq$	0,03			mm
– axial	$\leq$	0,15			mm
23 Housing material		steel, black coated			
24 Mass		2			g
25 Direction of rotation		clockwise, viewed from the front face			
26 Speed up to	$n_{max}$	24 000			min <sup>-1</sup>
27 Number of pole pairs		1			
28 Magnet material		NdFeB			
<b>Rated values for continuous operation</b>					
29 Rated torque	$M_N$	0,17	0,16	0,15	mNm
30 Rated current (thermal limit)	$I_N$	0,29	0,14	0,092	A
31 Rated speed	$n_N$	2 500	2 500	2 500	min <sup>-1</sup>

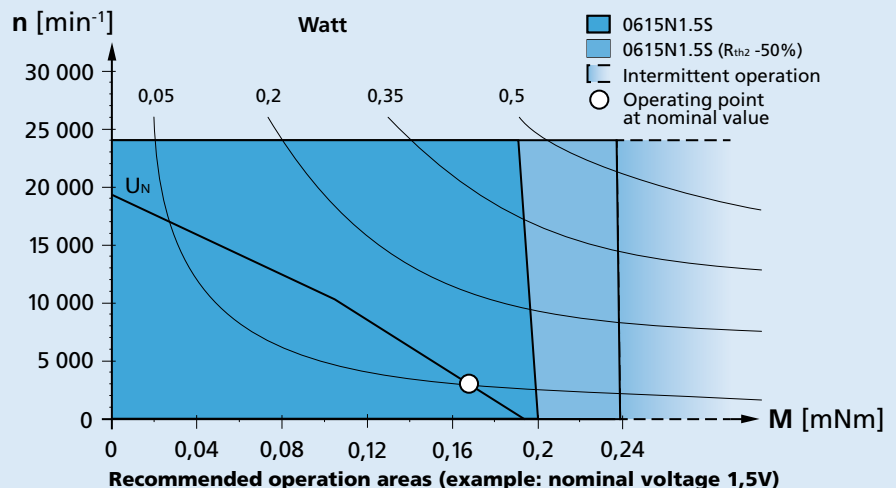
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 0%.

**Note:**

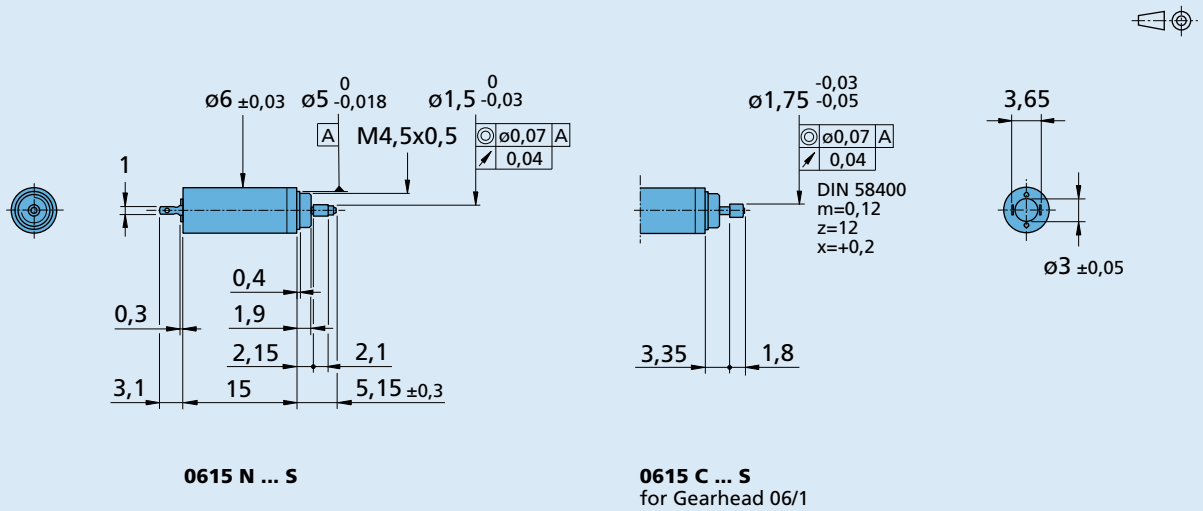
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

The nominal voltage ( $U_N$ ) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



**Dimensional drawing**



**Options**

Example product designation: **0615N003S-K179**

Option	Type	Description
K179	Bearing lubrication	For vacuum of 10 <sup>-5</sup> Pa @ 22°C
K188	Temperature range	Extended temperature range (-30...+125°C)
K1480	Second shaft end	Ø 0,8 mm x 4,5 mm
K1655	Encoder combination	Motor with rear end shaft for combination with Encoder PA2-50
K1707	Encoder combination	Motor with rear end shaft for combination with Encoder HXM3-64

**Product combination**

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
06/1	PA2-50 HXM3-64	SC 1801 P SC 1801 S MCDC 3002 P MCDC 3002 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.